BROAD AGENCY ANNOUNCEMENT (BAA)
DTRS57-01-R-20031

Runway Status Light System: Field Lighting System

1 REQUEST FOR PROPOSAL - OVERVIEW

The John A. Volpe National Transportation Systems Center (VNTSC) is an organization within the Research and Special Programs Administration, U.S. Department of Transportation. The VNTSC performs research on a wide variety of modes of transportation. As part of an upcoming project to study techniques to reduce runway incursions on airports throughout the country, the VNTSC is issuing this Request for Proposal (RFP) soliciting and requesting proposals from interested and experienced aviation lighting system manufacturers, issued under the provisions or paragraphs 35.016 and 6.102(d)(2)(i) of the Federal Acquisition Regulation (FAR) which provides for the competitive selection of research and prototype proposals for scientific study or experimentation directed toward advancing the state-of-the-art or increasing knowledge or understanding. The VNTSC is interested in receiving proposals for the research efforts described below. This announcement is an expression of interest only and does not commit the Government to make any award or to pay any response participation costs.

The cost of proposal preparation for responses to a RFP is not considered an allowable direct charge to any resultant contract or any other contract. This RFP is to solicit technical/cost proposals in the area of aviation lighting systems and individual lighting system components. For more specifics on the system, refer to the applicable section below.

The government will evaluate each offeror's system solution against the requirements herein. Individual component manufacturers are encouraged to team with system solution vendors to meet overall system objectives. Furthermore, the government encourages alternative proposals that would meet the overall requirements delineated in this package. Alternative solutions meeting system objectives, even at the cost of specific requirements, will be considered without prejudice.

2 RUNWAY STATUS LIGHT SYSTEM - OVERVIEW

The Federal Aviation Administration (FAA) is working to implement a new system to prevent runway incursions and improve overall safety on the airport surface. The proposed Runway Status Lights System (RWSL; see figure 1) will enhance airport surface safety through the use of surveillance-based, automatically controlled status lights to alert pilots or ground vehicle operators that a runway is unsafe for entry, crossing, or departure. Using data provided by the surveillance system, the Light Control Computer (LCC) will apply safety algorithms and logic to trigger the Light Computer (LC). The LC will activate and de-activate lights installed at appropriate runway/taxiway intersections. Illumination of these lights will indicate to a pilot or vehicle operator that it is unsafe to cross or enter a runway. Note that lack of RWSL illumination does not imply that the pilot or driver has clearance to enter or cross the runway. The system augments, rather than replaces or overrides, the Air Traffic Controllers who are still ultimately responsible for traffic control at the airport. The RWSL will help reduce the incidence of runway incursions through improved pilot and vehicle operator situational awareness in the runway environment. The RWSL may be installed at an FAA-designated airport at a later date for evaluation by pilots, controllers, and airport personnel. The purpose of this RFP is to solicit proposals on one specific subsystem of the entire RWSL: the Field Lighting System (FLS).

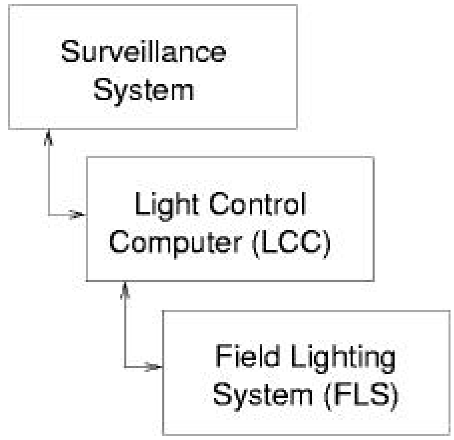

Figure 1 - Top Level Block Diagram for Runway Status Light System (RWSL)

3 FIELD LIGHTING SYSTEM - OVERVIEW

As part of the RWSL, the FLS will receive light control instructions from the LCC in response to arriving, departing, and surface traffic. A top-level block diagram of the FLS is shown in Figure 2. Components of the FLS shall be fully described in each vendor's proposal, forming a single, fully-integrated system, comprising:

a. tower-to-vault communication link
b. light computer or light operation logic system (LC), including uninterruptible power supply (UPS);
c. variable power supplies (e.g., constant current regulators (CCRs)) and all necessary power cables and supporting equipment to drive the light fixtures;
d. light fixture communication system, including individual light controllers (ILCs; e.g., controllable transformers), managed by the LC;
e. in-pavement and/or elevated light fixtures, including light bases and all supporting equipment.

FLS configurations that make maximum use of commercial, off-the-shelf (COTS) equipment with fast response time (e.g., time from computer command to light visibility) and high reliability (see Section 7, item 4) will be favored.

4 FIELD LIGHTING SYSTEM EQUIPMENT AND OPERATION

The RWSL LCC, external to the FLS, will communicate with the LC to command particular field lights on/off, request light status, etc. The LC will be located, along with the variable power supplies, in the lighting vault on the airfield. Since significant physical separation exists between the LCC and the LC, and there is potential for electromagnetic interference, a high quality distance communication link (e.g., fiber optic path with appropriate modems) shall be used. The communication link shall provide a standard data communication interface to the LCC (see Section 6). The LC assembly will contain the hardware and software necessary to control the output level of the variable power supplies and to communicate with the ILCs on the airfield.

The vendor shall use equipment that meets the standards and specifications of the appropriate Advisory Circulars outlined in FAA Advisory Circular AC 150/5345-53B, Appendix 3. The FLS must be capable of controlling at least thirty-two (32) light fixtures and scalable to one thousand five hundred (1,500) light fixtures. Two generic styles of lighting fixtures are contemplated: a semi-flush mounted fixture buried directly in the runway, and a pole-mounted "wig-wag" style fixture mounted along the sides of the taxiways. Either light style, or a combination of light styles, may ultimately be implemented as Takeoff Hold Lights (THLs) or Runway Entrance Lights (RELs).

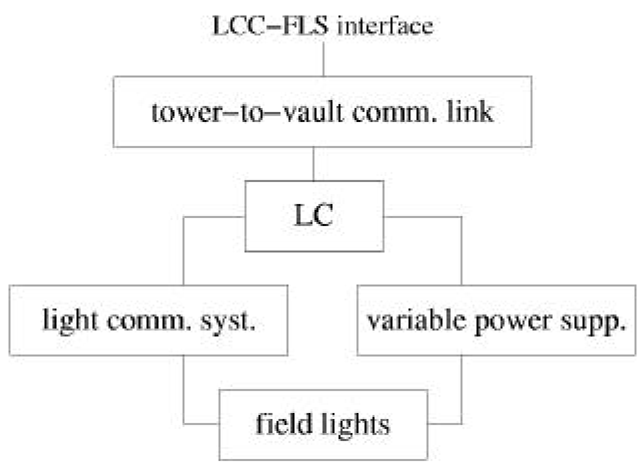

Figure 2 - Top Level Block Diagram for RWSL Field Lighting System (FLS)

The power system will comply with standard airport lighting requirements, including constant, controllable lamp brilliance regardless of the distance from the power source. Power is provided to the lights from one or more variable power supplies (e.g., FAA type L-828 CCRs). The LC must be capable of determining status of each variable power supply.

Typically, the light fixtures are operated via isolation transformers for safety, and controlled by ILCs, described below. Each ILC shall have the ability to control the operation of the lights in the fixture in which it is installed, in response to signals from the LC. The LC must be capable of determining status of each ILC.

The LC will engage in the following possibly concurrent activities:

Receiving and processing commands and alert replies from the LCC.

Sending command replies and alerts to the LCC.

Sending light control signals to the ILCs, and monitoring ILC/light state changes.

Sending light intensity signals to the variable power supplies, and monitoring variable power supply state changes.

The LC shall assess the health of all FLS components to identify any such components that have failed, and to determine the corresponding operational capabilities of the FLS to meet specified performance and/or functionality. FLS components, which shall be monitored by the LC and for which separate health status reporting shall be provided, include:

- Light fixtures
- Lamp filaments and connections to the ILC
- Light Communications network, (cable integrity, interface hardware, etc.)
- Variable power supply systems (CCRs, power circuit integrity, interface hardware, etc.)
- Other FLS vault equipment that is integral to FLS operation

The LC shall report all detected FLS faults to the LCC.

The RWSL FLS will employ one or more lighting circuits. These circuits will support lights that may be geographically up to fifteen thousand (15,000) feet from the LC. These circuits may be installed in underground conduit, sharing space with other power conductors. Each ILC shall control one or two lamps whose luminance and performance characteristics are comparable to FAA type L-852G in-pavement light fixture or the FAA type L-804 elevated fixtures, respectively. ILCs shall contain adequate circuitry to monitor and report the health and on/off status of each lamp in the lighting fixture. Each ILC shall enter the off state (lamps off) upon power-up and in response to a power interruption of more than two seconds.

The UPS powering the LC shall be capable of providing backup power to the LC for a period of up to thirty (30) minutes without degradation of LC performance.

All components exposed to the outdoor environment shall operate in an underground, fully submerged condition (with the exception of the lights), with up to 5,000 volts on the primary circuit (relative to ground, or open-circuit voltage), and should meet performance requirements over an ambient temperature range of -55 to +65 degrees Celsius.

5 SYSTEM PERFORMANCE REQUIREMENTS

The FLS must meet the following performance requirements under the operating conditions stated above and using a communication protocol as described in Section 6. Note that care will be taken to account for the LCC software to LCC-FLS interface component of the system response times described in the present section, so that the vendor's system is evaluated solely on the basis of the FLS component of these times.

5.1 Command Response Time

Command response time is the interval between issuance of a command by the LCC software and receipt of the corresponding FLS reply (action confirmation) by the LCC software. Note that all corresponding actions are required to be completed before the reply is sent to the LCC; specifically, the LC must have completed all switching and signaling to the relevant FLS components, but it need not have received state change confirmation from the components, at the time the reply is sent. The command response time is desired to be one (1) second maximum for ninety-eight per one hundred commands (98%), and two (2) seconds maximum for all commands, excluding reboot commands.

5.2 Alarm Generation Time

Alarm generation time is the interval between occurrence of an FLS component or system failure that prevents the FLS from performing required operations (e.g., illuminating a lamp; extinguishing a lamp) and receipt of the corresponding alarm frame by the LCC software. The alarm generation time is required to be one (1) second maximum for ninety-eight per one hundred alarm conditions (98%), and two (2) seconds maximum for all alarm conditions.

5.3 Light Illumination, De-Illumination, and Intensity Change Times

It is understood that, for particular airfield light fixtures, illumination can occur gradually after power is applied. It is then conceivable that, at the time a reply is received by the LCC indicating a lamp has been switched on, the corresponding lamp may be at something less than full illumination. Because light illumination is the most critical end result for the RWSL, it is necessary to specify a separate light illumination time requirement, independent of command response time.

Light illumination time is the interval between the issuance of a light set "on" command (for a light that is "off") by the LCC software and the time the corresponding light reaches fifty percent (50%) of full illumination. The light illumination time is required to be one (1) second maximum for ninety-eight per one hundred illuminations (98%), and two (2) seconds maximum for all illuminations.

Light de-illumination time is defined analogously, with identical requirements, to the light illumination time.

Intensity change time is the interval between the issuance of a power supply level change command by the LCC software and the time the corresponding light reaches the midpoint between the present setting and the commanded (changed) intensity setting. The intensity change time is required to be thirty (30) seconds maximum for ninety-eight per one hundred intensity changes (98%), and sixty (60) seconds maximum for all intensity changes.

6 DATA COMMUNICATION SPECIFICATIONS

The LCC sends commands and alert replies to the FLS and receives command replies and alerts (failure notices) from the FLS. This section describes LCC-FLS communication in detail.

Note: In accordance with the remarks in paragraph 3 of Section 1, proposals specifying alternative interfaces and/or communications protocols will be considered. Proposals for other formats shall be described by the vendor in the same level of detail as this section.

Communication occurs via an asynchronous EIA-232 serial communication interface operating at 115,200 bits per second, 8-N-1 (eight bits per byte, no parity, one stop bit). Communication between the LCC and FLS occurs in variable-length frames as the following.

6.1 Frame Format

The LCC and FLS exchange data using the following frame format:

	length	**content**
Preamble (SOF)	16 bits	0xAA AA
Header	136 bits	32 bits time stamp (seconds since epoch) 32 bits frame number (see below) 32 bits reply number (see below) 8 bits version/reserved (presently 0x00) 16 bits total length of frame in bits 16 bits control word (see below)
Data	0-65344 bits (integer multiple of 8)	depends upon control word (see below)
Error Check	32 bits	CRC-32 of header and data
Postamble (EOF)	8 bits	0xFF

Frame Number

The frame number is a unique (modulo 2^32) serial number for the frame, such that the first frame generated after application of power is frame number 0x00 00 00 00, and each subsequent frame number is incremented by one.

Reply Number

For a command or alert frame, the reply number is 0x00 00 00 00. For a reply frame, the reply number is equal to the frame number of the corresponding command or alert frame.

Control Word

The control word indicates particular actions or changes of state. Specific control words are described in the next section.

Data

The data field is zero-padded as necessary to a multiple of eight bits. Note that although up to 65,344 data bits are permitted, the present application limits use of the data field to 1,856 bits. This translates to a practical maximum frame size of 2,048 bits in the present application.

6.2 Control Words

The following control words must be supported by the FLS. The ability to add support for additional control words must be provided.

Commands (LCC to FLS):

control word	**data**	**description**
0x00 00	one bit (0=reinitialize, 1=reboot)	reset to power-up state via reinitialization or reboot
0x00 01	(none)	echo request
0x00 02	data bit i corresponds to light i and indicates 0=off or 1=on	set all lights on/off as specified
0x00 03	(none)	request status of all lights
0x00 04	byte i corresponds to variable power supply i and indicates level 0 through 255	set power supply level (light group intensity) to specified value
0x00 05	(none)	request status of all power supplies
0x00 06	data bit i corresponds to light i and indicates 0=no change or 1=change	toggle light state as specified (reserved; support for this command is presently optional)
0x00 07	24-bit blocks; the first 16 bits indicate a light i.d., the final eight bits indicate 0x00=off or 0x01=on	set lights on/off as specified
0x00 08	24-bit blocks; the first 16 bits indicate a power supply i.d., the final eight bits indicate level 0 through 255	set power supply levels (light group intensities) to the specified values
0x00 09	(none)	request status of light computer/light operation logic (including uninterruptible power supply)
0x00 0A	(none)	synchronize clock to time stamp

Command replies (FLS to LCC):

control word	**data**	**description**
0x00 00	(none)	reset complete
0x00 01	(none)	echo reply
0x00 02	(none)	light set complete
0x00 03	data bit i corresponds to light i and indicates 0=off or 1=on	status of all lights
0x00 04	(none)	power supply level set complete
0x00 05	byte i corresponds to variable power supply i and indicates value 0 through 255	status of all power supplies
0x00 06	(none)	light toggle complete
0x00 07	(none)	individual light set complete
0x00 08	(none)	individual power supply level set complete
0x00 09	first byte indicates CPU load; second indicates free memory; third, modem status; fourth, UPS battery status; fifth, UPS load status	status of light computer/light operation logic (including uninterruptible power supply) (see status details, below)
0x00 0A	(none)	clock synchronized

Light computer/light operation logic status details:

CPU load is specified in one-tenth units. Free memory is in megabytes. Modem status is reserved (presently unused). UPS battery status is in percent charge. UPS load is in percent capacity.

Alerts (FLS to LCC):

control word	**data**	**description**
0x80 00	first 16 bits indicate equipment type (see below); second 16 bits indicate equipment i.d . (see below); remaining bits contain textual description of fault type (ASCII characters)	alert (failure notice)
0xFF FF	(none)	power-up complete

Equipment types (first 16 data bits in alert frame):

0x00 00 Unknown or unspecified
0x00 01 Communication link (including CRC-32 error detection)
0x00 02 Light computer/light operation logic (including uninterruptible power supply)
0x00 03 Variable power supply
0x00 04 Light fixture communication system
0x00 05 Light fixture
0x00 06 Lamp

Equipment I.D. (second 16 data bits in alert frame):

Each equipment i.d. number corresponds to a physical device. The mapping of logical i.d. numbers to physical devices and provision of a convenient means for modifying or updating this mapping is the responsibility of the FLS vendor. Note that light, power supply, and other numbers indicated above refer to logical equipment i.d. numbers. Note also that the mapping of logical i.d. numbers to physical devices need not be one-to-one (e.g. light grouping).

Alert replies (LCC to FLS):

control word	**data**	**description**
0x80 00	(none)	alert received and processed
0xFF FF	(none)	power-up completion reply

6.3 Power-Up State, Reboot, and Reinitialize

The FLS *power-up state* is all lights off and all pending alerts and replies cleared (canceled). Between entry of the power-up state and receipt of the first LCC command, the FLS must keep all lights in the off state.

Upon application, cycling (off and on), or interruption of power, the FLS must enter the power-up state, send a "power-up complete" alert to the LCC, expect a "power-up completion reply," and await commands from the LCC. This process must be completed in two minutes.

Upon receipt of a reboot command, the FLS must enter the power-up state, generate a "reset complete" reply, execute a system reboot, enter the power-up state, send a "power-up complete" alert to the LCC, expect a "power-up completion reply," and await commands from the LCC.

Upon receipt of a reinitialize command, the FLS must enter the power-up state, generate a "reset complete" reply, and await commands from the LCC.

6.4 Keep-Alive and Timeouts

If the LCC has not generated a new frame in any five (5) second interval, it will generate an echo request (keep-alive), and the FLS will then respond with an echo reply. If the FLS fails to receive a frame from the LCC in any five (5) second interval (timeout condition), it shall generate an alert frame with equipment type 0x00 01 (communication link failure). If the frame is not acknowledged with a corresponding alert reply within one (1) second, the FLS shall return to the power-up state.

Command replies (except reboot replies) and alert replies must be received within one (1) second of the corresponding command or alert. In the absence of a timely reply, the command or alert shall be resent once (using the same frame number). In the absence of a timely reply to a resent alert, the FLS shall generate a communication link failure alert frame and return to the power-up state.

7 PROPOSAL REQUIREMENTS

In order to submit a proposal on this Lighting Subsystem, information must be submitted in a succinct, logical, and easy to understand format. Proposals are limited to twenty-five (25) text pages, not including graphs, charts, photos, etc. Cost proposals are not subject to a length limitation. Proposals shall include:

1. A narrative explaining each of the major components within the proposer's system. This should include the dimensions, weight and other physical characteristics for each component. Any special environmental considerations for any of the components. Shop drawings or other plans showing the various components should be submitted.

2. A detailed description on how the proposed system's components are to be interconnected to form a single, fully integrated subsystem. Include a detailed drawing showing the spatial requirements for the entire system.

3. A detailed description of how the proposed system meets the performance requirements outlined in Section 5. Provide back-up data and test results as necessary to provide support to claims.

4. Information about the reliability of each component and the system as a whole should also be provided, including any impacts to the reliability of the system from cross-talk, environmental conditions at the airport (high water tables, etc.), different type of regulators, different types of fixtures on the same circuit (e.g., edge lights and guidance signs), etc. If the proposed system uses repeaters to communicate to ILCs, provide information on the reliability and availability of these repeater units, and indicate if, in the event of a repeater failure, there is a way to rapidly reconfigure the system to achieve a more desirable system availability. Statistical data should be provided to back-up the claims on the reliability of the various components.

5. Discuss the scalability of your system. In particular, the limitations on the number of circuits, numbers of ILCs on any one circuit or within the entire airfield, potential cross-talk problems between circuits, etc. and mitigation techniques to ameliorate EMI.

6. Outline what components in your system already have the associated FAA-certification from an approved testing laboratory. Provide copies of the certifications. Alternatively, explain or demonstrate how your equipment meets the standards of appropriate Advisory Circulars outlined in FAA Advisory Circular AC 150/5345-53B, Appendix 3.

7. State what technical measures have been designed into the proposed system in order to achieve the light response times. The vendor shall provide the time required for a light to reach fifty percent (50%) illumination in response to “on” and “off” commands at each intensity level.

8. A listing of past installations where lighting systems have been installed. The listing must include the name of the airport, a local reference's name and telephone number, the date when the installation took place, a description of the system installed, and any special issues associated with the installation.

9. A detailed description on how the proposed system meets the data interface requirements outlined in Section 6. Provide back-up data and test results as necessary to provide support to claims.

10. Discuss any design issues that must be factored into the final installation to ensure the system meets the performance specifications (e.g., use of shielded cables to eliminate noisy circuits, use of special type of CCRs that provide "cleaner" sine wave, etc.). Include a description of how a single “hard kill” switch (used to turn all lights off by cutting the power feed to all variable power supplies) would be incorporated into the installed system.

11. Provide an approximate unit cost and factory lead-time for each of the major components of the proposed system.

12. Provide a firm, fixed price to support Phase 2 of the evaluation (see section 8). This firm fixed price for the demonstration of the proposed system only shall be valid for 90 days.

Proposals are due within 30 calendar days from date of publication of this BAA on the Volpe National Transportation Systems Center Website.

The point of contact (POC) is:

Michael Attachi, Contract Specialist
(617) 494-2136.

This synopsis is for information purposes and constitutes the total request for proposal in connection with this BAA. Interested offerors should send an original and six copies of their proposals to:

Volpe National Transportation Systems Center
55 Broadway, Kendall Square
Cambridge, MA 02142-1093
Attn: Mr. Michael Attachi.

Proposals should be titled and shall identify the offeror's name, address, telephone and fax numbers, and email address. All responsible sources capable of satisfying the Government's needs may submit a proposal that will be considered by the VNTSC.

8 EVALUATION CRITERIA

The VNTSC plans to use a two-phased approach to evaluate the proposals received.

Phase 1: Review written proposals submitted by interested parties to assess compliance with the system performance requirements described in this BAA. Based on the review of the proposals, the VNTSC may unilaterally exercise the priced option (section 7, item 12) to perform an on-site evaluation of the selected system. The actual number of vendors asked to participate in Phase 2 will depend upon the number of viable responses, as well as on the amount of funding available.

Phase 2: Actual demonstration/evaluation of the proposed system at the vendor's facility. For Phase 2, the selected vendor(s) will be required to construct two mock airfield lighting circuits that are populated with different types of light fixtures and Individual Light Controllers. For more details on the mock airfield lighting circuits, refer to Section 8.2. The contractor’s test set-up shall be available not later than 15 days afteraward of a contract for this system demonstration. The vendor will be required to demonstrate that their system meets the performance specifications outlined in the RFP, as well as support independent verification testing performed by the VNTSC. Refer to Section 9 for more information about the verification testing.

8.1 Phase 1 - Evaluation Criteria

The VNTSC will evaluate all responsive proposals received based on the performance criteria outlined in thisannouncement. The primary evaluation criteria are:

a. Ability of vendor to provide a single, fully integrated airfield lighting control system that meets the operational needs specified in this solicitation using the equipment outlined in section 3 as a guide. (Actual system solution may vary from offeror to offeror.)

b. Ability of the system to meet the required performance specifications outlined in Section 5 of this RFP.

c. Vendor's experience installing, integrating, and maintaining airfield lighting systems at other airports.

d. Ability of the vendor's system to provide the required data interface, as outlined in Section 6 of this RFP, to connect their system with the remainder of the RWSL system.

e. The estimated lead-time for the vendor to fabricate and ship a complete fully-integrated airfield lighting system with at least 32 lights.

f. The estimated cost for the various components of the proposed system.

g. Other items as described in Section 7 of thisannouncement.

After evaluating each of the proposals submitted, the VNTSC will rank each proposal. The VNTSC will then determine which, if any, of the vendors will be asked to participate in Phase 2.

8.2 Phase 2 - Mock Airport Lighting Circuits Requirement

Those vendors funded to participate in Phase 2 of this effort must provide access to the following pieces of equipment, or equivalent:

a. Two variable power supplies conforming to FAA L-828 specifications.

b. Sufficient power cable to support variable power supply-to-ILC distances of five thousand (5,000) linear feet.

c. Twelve light fixtures with red lenses (L-852G or equivalent) and corresponding isolation transformers (L-830 or equivalent) conforming to applicable FAA specifications and suitable for in-pavement installation.

d. Twelve elevated light fixtures with red lenses (L-804 or equivalent) and corresponding isolation transformers (L-830 or equivalent) conforming to applicable FAA specifications.

e. All necessary splice connector kits.

f. One LC, including UPS.

g. Minimum of twenty-four ILCs.

h. Tower-to-vault distance communication link.

i. All necessary cables and connections between FLS components.

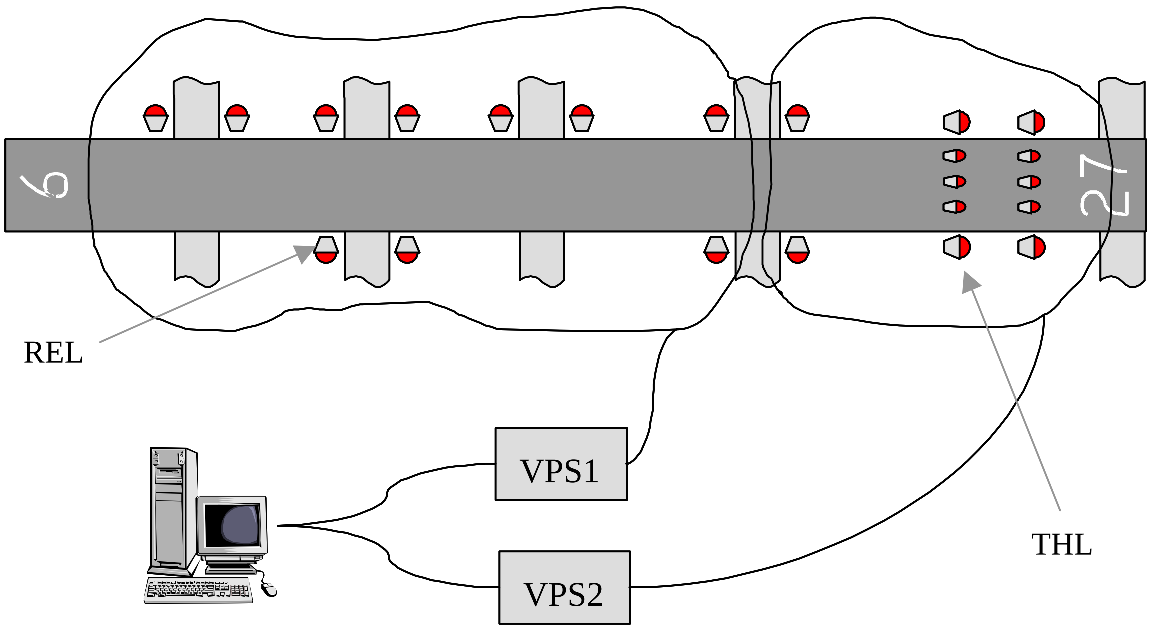

Figure 3 - Mock Airfield Lighting Circuit Diagram

The vendor must construct two airfield lighting circuits using his proposed solution, as shown in Figure 3. Each circuit will be powered from its own variable power supply. Each circuit will be approximately 5,000 feet in length (one way) and have six elevated and six in-pavement-capable lights and isolation transformers equally spaced along the entire length of the cable. An ILC would be installed at each light fixture location. The cables for the two circuits shall be wrapped together to simulate them in the same conduit and to promote possible cross talk between the two circuits. The lights shall be installed in such a fashion that all of them can be seen from one location. The light connections must be easily accessible for possible reconfiguration of the circuit and other testing procedures.

Prior to system set-up at the contractor’s facility, he must submit a sketch to the VNTSC of how they propose to arrange the equipment into the two different circuits for VNTSC COTR approval. Once approval has been granted, the vendor must complete the installation of the two circuits within two weeks. After system set-up has been completed, the vendor will have one week to perform system integration testing before the actual verification testing will take place. For more specifics on the verification testing, refer to Section 9.

9 VERIFICATION TESTING

VNTSC representatives will visit each vendor invited to participate in Phase 2 to inspect the mock airfield lighting circuits. The representatives will verify that the equipment has been installed per approved documentation and then observe as the vendor demonstrates the performance of the system. Copies of any test results performed by the vendor demonstrating the performance characteristics of the system may be provided.

In addition to the vendor's demonstration, the VNTSC will also perform a series of verification tests. The representatives will have a series of procedures for exercising the vendor's system. Commands will be transmitted via the external data communication interface to the LC and the results of the system's performance will be observed and measured. The light commands will follow the format described in Section 6. Additional measurements will be made to determine conformance with performance requirements.

10 FOLLOW-ON CONTRACT

If the VNTSC finds a vendor that offers an acceptable airfield lighting control system that fully conforms to operational and performance specifications, or offers alternative approaches with favorable cost/performance tradeoffs, the VNTSC may investigate the possibility of procuring and installing the selected system for an upcoming project at Dallas Fort Worth International Airport. This decision is also subject to available funding and contingent upon the government successfully completing other aspects.

11 LIST OF ABBREVIATIONS

ASCII	American Standard Code for Information Interchange
CCR	Constant Current Regulator
COTS	Commercial, Off-The-Shelf
CPU	Central Processing Unit
EIA	Electronic Industries Alliance
FAA	Federal Aviation Administration
FAR	Federal Acquisition Regulation
FLS	Field Lighting System
ILC	Individual Light Controller
LC	Light Computer or Light Operation Logic System
LCC	Light Control Computer
POC	Point Of Contact
REL	Runway Entrance Light
RFP	Request for Proposal
RWSL	Runway Status Light System
THL	Takeoff Hold Light
UPS	Uninterruptible Power Supply
VNTSC	Volpe National Transportation Systems Center